

SECTION 07 2400

EXTERIOR INSULATION AND FINISH SYSTEMS

LANL MASTER SPECIFICATION

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the ESM Architectural POC.

When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General Requirements.

Delete information within "stars" during editing.

Specification developed for ML-3 projects. For ML-1 / ML-2, additional requirements and QA reviews are required.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Exterior insulation and finish system (EIFS), composed of an inner layer of thermal insulation board and an outer layer forming the protective finish coating. The assembly is applied to a supporting substrate of construction indicated. Designation below for the class and type of exterior insulation and finish system specified in this section are based on those developed by the Exterior Insulation Manufacturers Association (EIMA).

- 1. Class PB Type A designates a polymer-based protective finish coating (Class PB), externally reinforced (Type A).

1.2 REFERENCES

Codes and standards – Comply with the following codes and standards including current editions, revisions and supplements.

- A. ASTM C578 - Rigid Cellular Polystyrene Thermal Insulation.
- B. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- C. EIMA (Exterior Insulation Manufacturers Association) - Guideline Specification for Exterior Insulation and Finish Systems, Class PB.
- D. NFPA 255 (National Fire Protection Association) - Test of Surface Burning Characteristics of Building Materials.
- E. UL 723 (Underwriters Laboratories, Inc.) - Tests for Surface Burning Characteristics of Building Materials.

- F. EPA (Environmental Protection Agency) CPG (Comprehensive Procurement Guideline), <http://www.epa.gov/cpg>.
- G. FM (Factory Mutual) - Research Specification Tested Products Guide
- H. UL's Product Directories, Volume 1 – Building Materials, Roofing Materials and Systems, Fire Protection Equipment, Fire Resistance
- I. International Conference of Building Officials – International Building Code 2000

1.3 DEFINITIONS

- A. System: The System shall consist of the fasteners (adhesive or mechanical), insulation board, reinforcing mesh, reinforcing trim, base coat and finish coat, with approved accessories sealants, backer rods, etc.

1.4 SUBMITTALS

- A. Submit the following in accordance with the requirements of Section 01330, Submittal Procedures.
- B. Product Data: Manufacturer's technical data for each component of exterior insulation and finish system.
- C. Installation Instructions: Manufacturer's literature indicating installation specifications and procedures.
- D. Shop Drawing(s): Provide details of all elements illustrating integration of the exterior wall systems with other adjacent and/or applicable building systems. Indicate all exposed joints, surface patterns and decorative detailing elements. Graphically illustrate vapor barriers, flashing and sealant locations.
- E. Certification: Submit certification that system has passed a full scale fire test in accordance with IBC 17-6.
- F. Certification: Submit certification that system is FM or UL listed.
- G. Certification: Submit a list of at least 10 representative projects, constructed in Northern NM, that are at least 5 years old and show no signs of surface deterioration, fading, compromise of structural integrity or compromise of weather tightness.
- H. Samples: Submit 2 foot square for each finish, color, and texture indicated.
 - 1. Prepare samples using same tools and techniques intended for actual work.
 - 2. Incorporate within each sample a typical control joint filled with sealant of color indicated or selected.

- I. Installer certificates signed by manufacturer certifying that installers comply with specified requirements.
- J. Test reports for system from a qualified independent testing laboratory certifying and interpreting test results relative to system's compliance with requirements for fire performance characteristics, bond integrity, and material properties.
- K. Sealant compatibility and test report from sealant manufacturer certifying that materials forming joint substrates of system have been tested for compatibility and adhesion with joint sealants; include sealant manufacturer's interpretation of results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.

1.5 QUALITY ASSURANCE

- A. Qualifications of Installer: Certified applicator approved by the manufacturer of exterior insulation and finish system, and shall have a minimum of 5 years experience in installation of specified system and shall submit evidence such as a list of installations and responsible party to contact to verify experience in accordance with paragraph 1.4, A, 5 above.
- B. Codes and Standards: Comply with the following codes and standards including current editions, revisions and supplements.
 - 1. ASTM C150, Portland Cement.
 - 2. ASTM E84, Test Method for Surface Burning Characteristics of Building Materials.
 - 3. ASTM C578, Insulation Board, Thermal (Polystyrene).
- C. Single Source Responsibilities: Materials for the exterior insulation and finish system shall be from a single manufacturing source, or one that is approved by the system manufacturer.
- D. Very shortly before the installation of EIFS and associated work, meet at Project site with installer, EIFS manufacturer representative, installers of related work and other entities concerned with EIFS performance and appearance, including LANL, installer's superintendent, and Contractor. This meeting is to discuss such issues as what else is happening on site, what conditions the weather will impose on installation and what the plan is for temperature maintenance. Record discussions and agreements, and furnish copy to each Attendee. Provide at least 72 hours advance written notice to participants prior to convening pre-installation conference.

1.6 SITE CONDITIONS

A. Environmental Requirements:

1. Application of the System shall be at ambient temperatures and on unfrozen surfaces in accordance with manufacturer's recommendations.
2. Minimum ambient temperature for a duration period after installation shall be per manufacturer's recommendation.

1.7 GUARANTEE

- A. Upon completion of work, Contractor and Installer together with "System Manufacturer" shall furnish a written guarantee against any and all defects in materials and /or workmanship for a period of 5 years following final acceptance of work by LANL.
- B. The Contractor shall guarantee, upon notice by LANL, he will immediately make good any defects in material or workmanship, or both, within the same 5 year period covered by the guarantee, at no additional cost to LANL.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in original, unopened packages with manufacturer's labels identifying products legible and intact.
- B. Store materials inside and under cover; keep them dry, protected from the weather, direct sunlight, surface contamination, aging, corrosion, damaging temperatures, damage from construction traffic and other causes.
- C. Stack insulation board flat and off the ground.

PART 2 PRODUCTS

2.1 GENERAL

- A. Furnish components from a single system manufacturer or a source approved by the system manufacturer.
- B. Exterior insulation finish system shall be listed as an assembly by an ANSI-recognized national testing laboratory having been tested under a full scale fire test. It shall have a flame spread of 25 or less and smoke developed rating of 50 or less in accordance with ASTM E-84.

2.2 MATERIALS

- A. Compatibility: Provide adhesive, board insulation, reinforcing fabrics, base and finish coat materials, sealants, and accessories which are compatible with one another and approved for use by system manufacturer.

- B. Provide colors and texture of protective coating to comply with following requirements:
 - 1. Provide selection made by LANL from manufacturer's full range of standard colors and textures suitable for the range of finish coat indicated.
- C. Surface-Sealer: System manufacturer's standard adhesion intermediary designed to improve bond between substrate of type indicated and adhesive for application of insulation.
- D. Adhesive for Application of Insulation: System manufacturer's standard formulation designed for indicated use, compatible with substrate and complying with the following requirements:
 - 1. Factory-mixed formulation designed for adhesive attachment of insulation to substrates of type indicated, as approved by system manufacturer.
- E. Polystyrene Board Insulation:
 - 1. Rigid cellular thermal insulation formed by the extrusion of polystyrene base resin to comply with ASTM C 578 for Type I.
 - 2. Aged in block form prior to cutting and shipping by air drying for not less than 6 weeks or by another method approved by system manufacturer and producing equivalent results.
 - 3. 2 feet by 4 feet by thickness indicated, but not less than the minimum thickness allowed by system manufacturer and complying with requirements of system manufacturer for corner squareness and other dimensional tolerances.
 - 4. Provide extruded polystyrene board with a minimum of 9 percent recovered (recycle) material in accordance with EPA's CPG.
- F. Reinforcing Fabric: Balanced, alkali-resistant open weave glass fiber fabric treated for compatibility with other system materials; made from continuous multi-end strands with tensile strength of not less than 145 lbs. and 150 lbs. in warp and fill directions, respectively, per ASTM D 5035 and complying with ASTM D 578 and the following requirements:
 - 1. Weight of Standard Reinforcing Fabric: Not less than 4.0 oz. per square yard.
 - 2. Weight of Strip Reinforcing Fabric: Not less than 3.75 oz. per square yard.

- G. Base Coat Materials: System manufacturer's standard, job-mixed formulation of Portland cement complying with ASTM C 150, Type I, white or natural color, and system manufacturer's standard polymer-based adhesive designed for use indicated.
- H. Finish Coat Materials: System manufacturer's standard mixture complying with the following requirements for material composition and method of combining materials:
 - 1. Factory-mixed formulation of polymer emulsion admixture, color-fast mineral pigments, sound stone particles, and fillers.
- I. Water: Clean and potable. Contractor shall provide water if water is not available at site for installation of system.
- J. Mechanical Fasteners: System manufacturer's standard corrosion-resistant fastener assemblies complete with system manufacturer's standard washer and shaft attachments, selected for properties of pull-out, tensile, and shear strength required to resist design loads of application indicated, capable of pulling fastener head below surface of insulation board and of the following description:
 - 1. For attachment to steel studs from 0.033 inch to 0.112 inch in thickness provide steel drill screws complying with ASTM C 954.
 - 2. For attachments to masonry and concrete substrates provide sheathing dowel in the form of plastic wing-tipped fastener with thermal cap, sized to fit insulation thickness indicated and penetrate substrate to depth required to secure anchorage.

2.3 ELASTOMERIC SEALANTS

- A. Provide manufacturer's standard chemically curing, elastomeric sealant which is compatible with joint fillers, joint substrates, and other related materials and complies with requirements of Section 07920 – Joint Sealants for products corresponding to description indicated below.
 - 1. Multi-part non-sag urethane sealant.
- B. Sealant Color: Provide color of exposed sealants to comply with the following requirements:
 - 1. Match finish coat color of system.

2.4 MIXING

- A. Comply with system manufacturer's requirements for combining and mixing materials.
- B. Do not introduce admixtures, water, or other materials except as approved by system manufacturer.

- C. Mix materials in clean containers. Use materials within time period specifically by system manufacturer or discard.

PART 3 EXECUTION

3.1 PREPARATION

- A. Ensure that adjacent materials are protected from damage or staining during installation of exterior insulation and coating system. Protect contiguous work from moisture, damage, and soiling resulting from application of system.
- B. Do not begin work of this section if substrate condition will adversely affect acceptable results. Immediately notify the Contract Administrator.
- C. Protect system, substrates, and wall construction from inclement weather during installation. Prevent infiltration of moisture behind system and deterioration of substrates.
- D. Substrate Preparation:
 - 1. Prepare and clean substrates to comply with system manufacturer's requirements to obtain optimum bond between substrate and adhesive insulation.
 - 2. Apply surface-sealer over substrates where required by system manufacturer for improving adhesive.

3.2 INSTALLATION

- A. Install system in strict accordance with the system manufacturer's current published written instructions for installation of system as applicable to each type of substrate indicated.
- B. Adhesively and mechanically attach insulation to comply with the following requirements:
 - 1. Allow adhered insulation to remain undisturbed for period prescribed by system manufacturer but not less than 24 hours, prior to beginning rasping and sanding insulation or application of base coat and reinforcing fabric.
 - 2. Apply boards over dry substrates in courses with long edges oriented horizontally; begin first course from a level base line and work upwards.
 - 3. Stagger vertical joints in successive courses to produce running bond pattern.
 - 4. Abut boards tightly at joints within and between each course to produce flush, continuously even surfaces without gaps or raised edges between insulation boards. If gaps occur, fill with insulation cut to fit gaps exactly; insert without use of adhesive.

5. Rasp or sand flush any irregularities projecting more than 1/32 inch from surface of insulation; do not create depressions deeper than 1/16 inch.
 6. Cut insulation to fit openings, corners, and projections precisely and to produce edges and shapes conforming to details indicated.
 7. Interrupt insulation where expansion joints are indicated in substrates behind exterior insulation and finish systems.
 8. Form joints for sealant application between insulation edges and dissimilar adjoining surfaces projecting through insulation.
 9. Treat exposed edges of insulation board, including those forming substrates of sealed joints within system or between system and other work, by encapsulation with base coat, reinforcing fabric, and finish coat.
 10. Coordinate flashing installation with installation of insulation to produce a wall system that does not allow water to penetrate behind protective coating.
 11. Do not install in a manner that will trap moisture inside wall cavity.
- C. Apply base coat to exposed surfaces of insulation in minimum thickness specified by system manufacturer.
- D. Fully embed reinforcing fabric of weight indicated below in wet base coat to produce wrinkle-free installation with fabric continuous at corners and lapped or otherwise treated at joints to comply with system manufacturer's requirements.
1. Fabric Weight: Standard, unless otherwise indicated.
- E. Apply finish coat over dry base coat in thickness required by system manufacturer to produce a uniform finish of texture and color matching approved sample.
- F. Extend waterproof basecoat 18 inches down wall from top of sills and both sides at parapets. Where roof side is less than 18 inches, carry waterproof base coat to flashing. At walls, extend up 24 inches from finish grade or as indicated on drawings.
- G. Prior to installation of finish coat, inspect base coat for evidence of mesh telegraphing, visible joints between mesh layers, visible joints between insulation boards or areas out of true plane beyond allowable tolerances. If any of these conditions exist, do not proceed with finish coat installation until faulty installation of finish substrate has been rectified and accepted by LANL for greater clarity.

3.3 INSTALLATION OF JOINT SEALANTS

- A. Prepare joints and apply sealants, of type and at locations indicated, to comply with applicable requirements of Section 07 9200 – Joint Sealants.

3.4 FIELD QUALITY CONTROL

- A. Inspect system for plane tolerances prior to execution of each phase of the system. If tolerances are larger than those specified, rework problem areas, at Contractor's expense, prior to installation of subsequent phase of installation.
- B. Upon completion of the installation, request LANL inspection of the installation to verify that the work is complete, properly installed and acceptable. If faulty work is encountered, remove and reinstall at Contractor's expense to the acceptance of LANL.

3.5 CLEANING AND PROTECTION

- A. Remove temporary covering and protection of other work. Promptly remove protective coatings from window and door frames, and any other surfaces outside areas indicated to receive protective coating.
- B. Provide final protection and maintain conditions until product "cures" and in a manner acceptable to Installer and system manufacturer, which ensures system remains without damage or deterioration until time of Substantial Completion.
- C. Repair or replace damaged or disfigured surfaces caused by work of this section

END OF SECTION

Do not delete the following reference information:

FOR LANL USE ONLY

This project specification is based on LANL Master Specification 07 2400 Rev 0, dated January 6, 2006.